

Satellites and Orbits: an Introduction

Glossary

Apogee	The point in an orbit farthest from the Earth.
Argument of Perigee	The angular distance between the ascending node and the point of perigee.
Artificial	Made by humans; produced rather than natural.
Closed Orbit	A circular or elliptical orbit. A body on a closed orbit constantly travels around a planet or a star.
Eccentricity	The ratio between distance from the center of the ellipse (which isn't the center of the Earth) to the focus of the ellipse (which is the center of the Earth) and the semi-major axis. The value can be from 0 to 1, with 0 being a circle and the numbers up to one defining increasingly elongated and flattened orbits.
Echo	A type of passive communication satellite launched by NASA in the 1960's.
Epoch	An arbitrary fixed instant of time or date used as a chronological reference for orbital motions.
Equatorial Orbit	An orbit that lies at any altitude above the Equator, i.e. has an inclination of 0 degrees.
Geostationary Orbit	A Geosynchronous Orbit having zero inclination so that the spacecraft hangs motionless with respect to a point on the planet below.
Geosynchronous Orbit	A direct, circular, low-inclination orbit around Earth having a period of 23 hours 56 minutes 4 seconds and a corresponding altitude of 35,784 km (22,240 miles, or 5.6 Earth radii).
GOES	Geostationary Operational Environmental Satellite
Gravity	The force of attraction between all mass in the universe; particularly the force by which objects are drawn towards each other and to the Earth.
Inclination	The orbit ellipse lies in a plane, and this plane forms an angle with the plane of the Equator. This can be visualized as the tilt with respect to the Equator.
IPO	Integrated Program Office. The tri-agency government organization that manages the National Polar-orbiting Operational Environmental Satellite System program. It employs personnel from the Department of Commerce, Department of Defense and the National Aeronautics and Space Administration.
ISS	International Space Station.
Longitude or Right Ascension	The node's celestial longitude - an angle, measured from the center of the Earth, from the vernal equinox to the ascending node.
Low Earth Orbit	The lowest altitude a spacecraft must achieve to orbit the Earth. Altitudes for Low Earth Orbit range from around 100 km to 1,500 km. Spacecraft orbiting in Low Earth Orbit can circle the Earth once every ninety minutes or so.
LTAN	Local time of the ascending node - the local time of the satellite as it crosses the Equatorial plane from the southern to northern hemisphere.
Motion	A natural event that involves a change in the position or location of

	something [syn: movement].
NASA	National Aeronautics and Space Administration.
Natural	Existing in or produced by nature; not artificial or imitation; "a natural pearl"; "natural gas"; "natural silk"; "natural fertilizers" [ant: artificial].
NOAA	National Oceanic and Atmospheric Administration.
Nodes	The points where an orbit crosses a plane, such as a satellite crossing the Earth's Equatorial plane. If the satellite crosses the plane going from south to north, the node is the ascending node; if moving from north to south, it is the descending node.
NPOESS	National Polar-orbiting Operational Environmental Satellite System.
Open Orbit	An open orbit follows a mathematical shape: either one known as a parabola or another called a hyperbola. Both are sweeping curves that never join up.
Orbit	The path in space along which an object moves around a larger object, such as the Earth.
Path	The route or course along which something travels or moves.
Perigee	The point in an orbit closest to the Earth.
Period	The length of time required for a satellite to complete one orbit.
Polar Orbit	An orbit with an inclination of 90 degrees. A polar-orbiting satellite will pass over or very nearly over, both the North Pole and the South Pole each orbital period.
Prograde	Any orbit in which the spacecraft moves from west to east is termed prograde. This is the usual direction of rotation in our Solar System. Only a handful of objects orbit or rotate in the opposite direction.
Projectile	A fired, thrown, or otherwise propelled object. A projectile is an object upon which the primary acting force is gravity.
Retrograde	Any orbit in which the spacecraft moves from east to west. This is the less usual direction in the Solar System; however, it is not impossible. Venus has retrograde spin and some comets – notably comet Halley has a retrograde orbit.
Satellite	A celestial body that orbits a planet; a moon. An object launched to orbit Earth or another celestial body.
Sputnik	The world's first artificial satellite. Launched October 4, 1957 by the Soviet Union.
Telstar	An early communications satellite owned by a consortium including NASA and American Telephone and Telegraph. Telstar was launched on July 10, 1962.
TIROS	Television Infrared Observation Satellite. The first of a series of NASA meteorological satellites to carry television cameras.
Vernal Equinox	Reference point where the right ascension is defined to be zero.